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Training Standards
Aircraft Structural Repair Technician

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Aircraft Structural Repair Technician

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FOREWORD

With the support of an Employment and Immigration Canada (EIC) Industrial Adjustment Service contract, the aviation industry has been able to publish these standards for the Aircraft Structural Repair Technician.

This training standards document is released in conjunction with a corresponding Occupational Analysis for Aircraft Structural Repair Technicians. As these two documents are based upon the same analysis, it is recommended that they be reviewed concurrently.

STRUCTURE OF THE TRAINING STANDARDS

To facilitate the understanding of the nature of the occupation, the work performed by the technicians is divided into the following divisions:

A. **BLOCK** - is the largest division within the standard and reflects a distinct operation relevant to the occupation.

B. **TASK** - is the distinct activity, that combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".

General Performance Objective

This is a summary statement of the sub-tasks, skills and performance criteria for each task area.

Skills Specific Performance Objectives

Each statement includes a sub-task, sample tools and equipment where applicable, as well as performance conditions and performance criteria.

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TRAINING STANDARDS

BLOCK A - BASIC KNOWLEDGE AND EXPERIENCE

TASK 1 DEMONSTRATES SAFE WORKING PRACTICES AND TECHNIQUES

GENERAL PERFORMANCE OBJECTIVE

Demonstrates safe working practices and techniques by identifying potential health, safety and fire hazards, reporting injuries, wearing and using protective and emergency equipment, maintaining tools and equipment, practising good housekeeping and handling and storing hazardous materials, so that safety acts, Workplace Hazardous Material Information System (WHMIS) standards and Workers' Compensation Board (WCB) regulations and provisions are followed.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

1.01 Recognizes potential health and safety hazards, so that the potential for personal injury, damage to equipment, aircraft and the environment are minimized, corrective action as defined in government legislation or company policies is taken and hazards are reported.

1.02 Recognizes and handles hazardous materials, such as resins, fuels, oils, acids, paints and sealants using specified handling equipment, so that the technician is protected from injury, the environment from contamination and procedures followed are in compliance with provincial and federal legislation.

1.03 Complies with government safety standards and regulations so that accidents and fires are recorded and reported in accordance with WHMIS, safety acts and WCB regulations.

1.04 Uses personal protective equipment and clothing, such as respirators, safety glasses, ear muffs, gloves and aprons, so that the potential for accidents or injuries is minimized.

1.05 Operates emergency safety equipment, such as fire extinguishers, respirators, stretchers and fire blankets to extinguish fires and administer first aid, so that procedures are carried out in a safe, efficient manner in accordance with health and safety regulations.

1.06 Maintains good housekeeping in the work place by cleaning up oil spills, keeping work area clean and clear of obstructions and storing tools, so that the potential for accidents or injuries is minimized, and tools and equipment are in place and available for the next job.

1.07 Uses and maintains tools and equipment in safe manner, so that aircraft damage and personal injury are prevented, and tools and equipment are kept clean and in good working condition.

1.08 Assures protection from fire hazards by keeping work area clean, identifying and removing potential fire hazards, careful handling of explosive and/or flammable materials, so that hazardous situations and unsafe work practices are eliminated.

1.09 Reports injuries to supervisor promptly and efficiently ensuring that the injured person is attended to, information is recorded precisely as the incident occurred and future recurrence of similar accidents is prevented.

TASK 2 **ACCESSES REFERENCE MATERIAL AND DOCUMENTS WORK COMPLETED**

GENERAL PERFORMANCE OBJECTIVE

Accesses reference materials and documents work completed by reviewing task to be performed and selecting required reference documents, such as blueprints, service manuals, Transport Canada regulations and modifications bulletins, so that all required work criteria and procedures are identified, and work performed is fully documented as per Department of Transport standards.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

2.01 Locates required information by identifying aircraft, parts of assembly requirements and consulting and reviewing technical manuals, so that repair, modification and/or overhaul standards, procedures and techniques are available for review.

2.02 Refers to service manuals and other related documents to identify repair procedures, so that required material specifications and repair techniques and procedures can be reviewed and verified prior to/or during work.

2.03 Complies with Aviation Regulations by performing all inspection and repair procedures as per the regulation directives, so that work performed can be signed off and aircraft meets airworthiness standards.

2.04 Completes documents after repair/modification, so that work performed, parts replaced, time required and external repair services are recorded in compliance with company and Department of Transport regulations.

TASK 3 **SELECTS, OPERATES AND MAINTAINS HAND, POWER AND MEASURING TOOLS**

GENERAL PERFORMANCE OBJECTIVE

Selects, operates and maintains hand, power and measuring tools by reviewing task to be completed for tool and/or material requirements, so that all tools are selected and used as per their functional limitations, task requirements and safety standards, and repaired, lubricated, sharpened and stored to maximize their accuracy and length of use.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

3.01 Selects and operates hand, power and cutting tools for service and repair of aircraft structures by assessing job requirements, so that the required tools are identified and used to accurately complete the task without injury to the operator or damage to the structure or equipment.

3.02 Maintains basic hand, cutting and air tools by performing tasks, such as sharpening hand tools, and lubricating, storing and adjusting all tools, so that tools operate accurately without injury to the operator or damage to the equipment and tool life is maximized.

3.03 Selects and operates measuring tools by assessing job and task requirements, so that the required device is identified and measurements, such as pressure, size, weight and volume are determined and recorded accurately.

TASK 4 **TREATS METALS AND CORROSION**

GENERAL PERFORMANCE OBJECTIVE

Treats metals and corrosion by reviewing technical information, applying agents such as chemical coatings and chromate primers and by treating surfaces with processes, such as heat-treating and shot-peening, so that corrosion is chemically or mechanically removed, the degree of protection required is determined in accordance with alloy protection standards and the corrosion proofing is the same as or equivalent to the original.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

4.01 Refers to technical information, such as manufacturers' reference manuals, aircraft specific structural repair manuals, U.S. Department of Transportation Aircraft Inspection and Repair Manual, and engineering bulletins, so that metal corrosion treatment and prevention procedures, materials, equipment and standards are identified and interpreted.

4.02 Sand/bead blasts metal surfaces using tools and equipment, such as grit blasters or bead blasters, wire brushes and scrapers, so that the corrosion, surface abrasions and surface coatings are removed.

4.03 Cleans/etches aluminum alloy surfaces chemically using tools and equipment, such as dipping vats, spray guns or brushes, so that the removal of corrosion, abrasion and surface coatings is confirmed both visually and by water surface tension tests.

4.04 Applies chemical coatings, such as chromic acid to aluminum alloy surfaces using tools and equipment, such as brushes and spray guns, so that the aluminum surface is protected against further corrosion, product manufacturers' application and safety procedures are followed.

4.05 Applies chromate primers using tools and equipment, such as brushes and spray guns, so that the coating is evenly applied and distributed, no metal surfaces are exposed and surface is ready for painting.

4.06 Heat-treats aluminum alloys using tools and equipment, such as heat-treat ovens and sodium baths, so that a hardness test of the sample part meets manufacturers' and/or company standards.

4.07 Shot/flap-peens metal surfaces, so that stress is relieved by evenly and uniformly deforming the metal surface and the surface is able to withstand required stress load.

4.08 Primes/paints steel alloy surfaces using tools and equipment, such as spray guns, brushes and dipping baths, so that coats are evenly applied without streaks or air bubbles.

4.09 Protects steel tubular structures, internally, using tools and equipment, such as drills, plugs and indicators, so that oil is evenly applied to inner surfaces or a sufficient quantity of inert gas is introduced without leakage.

4.10 Applies water displacing compounds to metal alloys using spray equipment, so that the compound is evenly distributed and no surfaces are exposed to the air.

4.11 Replaces levelling compound using tools and equipment, such as spatulas and scrapers, so that moisture flows continuously towards drains and does not pool inside surfaces of aircraft structures.

4.12 Attaches sacrificial anodes to metal structures using tools, such as pliers and screwdrivers, so that corrosion is localized at anode and metal structures are protected.

4.13 Inserts dielectric material between or coats dissimilar metals using tools and equipment, such as spray guns, brushes, dipping baths and shears, so that the material is cut and fit to size and coatings are evenly applied to metal surfaces.

TASK 5 **CONSTRUCTS JIGS AND HOLDING FIXTURES**

GENERAL PERFORMANCE OBJECTIVE

Constructs, selects and sets up jigs and holding fixtures by interpreting and reviewing blueprints, drawings, technical information and manuals, fitting jigs to sample components or assemblies and requesting approval for jigs or holding fixtures, so that jigs or fixtures are free from defects, securely assembled, conform to aircraft reference points and meet Department of Transport standards.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

5.01 Interprets drawings and technical information for jigs and holding fixtures using tools and equipment, such as verniers, scales and compasses, so that assembly procedures, sequence of assembly, materials, dimensions, tolerances, finishes and fasteners are identified, the requirement to consult with the manufacturer or engineering department is determined and jigs and fixtures are assembled in accordance with manufacturers'/engineering department specifications and standards.

5.02 Selects jig or holding fixture material, so that jig or fixture material is free from distortion, defects or damage and it conforms to technical standards and specifications.

5.03 Assembles jigs and holding fixtures using tools and equipment, such as welders, rivet gun, brake, shears, tube bender, air drill, screwdriver, so that material is cut, formed and fastened securely in accordance with drawing and/or structural repair manual specifications and procedures.

5.04 Fits jigs and holding fixtures to sample components or assemblies using tools and equipment, such as a level, transit, trammel, tape measure, shims, spacers, wrenches and pry bars, so that jigs or fixtures are firmly attached to reference/hard points on aircraft structure or assembly, the assembly or part is held in alignment without distortion and within required tolerances.

5.05 Seeks approval for jigs or holding fixtures, so that documents, such as assembly procedures and drawings, are prepared and forwarded to manufacturer/Department of Transport and/or company engineering department and jig or holding fixture will meet Department of Transport specifications.

TASK 6 **SEALS STRUCTURES**

GENERAL PERFORMANCE OBJECTIVE

Seals structures by preparing surfaces, masking area to be sealed and conducting positive and negative pressure tests, so that sealant selected is mixed, cured and applied evenly to aircraft components and meets manufacturers' specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

6.01 Refers to technical information and/or structural repair manual, so that location of repair, types of sealants, surface preparation and sealant application procedures are identified.

6.02 Prepares surfaces for application of sealants using tools and equipment such as scrapers and brushes, so that surface is free of dirt, corrosion and abrasions and required treatments and primers are applied in accordance with manufacturers' specifications and procedures.

6.03 Selects sealants, so that container is properly sealed and sealant is free of contamination within prescribed shelf-life and meets aircraft manufacturers' specifications.

6.04 Mixes sealants, using tools and equipment, such as spatulas, mixers, weigh scales and volumetric measuring containers, so that proportions of catalyst and base are in accordance with manufacturers' specifications, sealant components are thoroughly and evenly mixed with a consistent texture and colour and amount prepared is sufficient for repair procedure and can be applied within sealant set-up time.

6.05 Masks the area to be sealed using masking tape, so that a constant edge distance is maintained, the required bead seal can be produced and sealant is confined to repair area.

6.06 Applies sealant, using tools and equipment, such as spatulas, brushes and gun applicators, so that sealant is neatly, consistently and uniformly distributed over total repair surface, required bead is produced, required curing temperatures and times are followed and sealant firmly adheres to repair surface.

6.07 Conducts positive and negative pressure tests, using tools and equipment, such as leak detectors, soap and water, so that all leaks are isolated, requirement for rework is determined and bonding and sealing are ensured.

TASK 7 **INSTALLS FASTENERS**

GENERAL PERFORMANCE OBJECTIVE

Selects and installs fasteners by interpreting drawings and technical information, laying-out fastener pattern, preparing and treating fastener holes and fasteners, and inserting collars, washers and inserts on fasteners, so that type, diameter and material of fasteners are in accordance with drawings, specifications and technical information, defective fasteners are identified and replaced, and aircraft structures are aligned and securely fastened.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

7.01 Interprets drawings and technical information so that fastener types, lengths, locations and installation procedures are identified.

7.02 Selects fasteners using tools and equipment such as grip-length gauges and micrometers, so that type, material, length and style of head match aircraft manufacturers' specifications and fastener holds components/assemblies firmly in place.

7.03 Lays out fastener pattern using tools and equipment, such as straight edge, verniers, squares and punches, so that edge distance and rivet pitch are maintained to aircraft manufacturers' specifications.

7.04 Drills, reams and countersinks holes for fasteners using equipment and tools, such as air drills, reamers and countersinks, so that clearances and edge distances are within manufacturers' and/or Department of Transport specifications, surface finish meets prescribed standards and holes are dressed to remove sharp edges.

7.05 Cold works fastener holes using tools and equipment, such as reamers and special cold working tools, so that hole is prestressed and holes are reamed to final size in accordance with aircraft manufacturers' drawings and specifications.

7.06 Treats fastener holes with chemical coatings and/or paint using tools and equipment, such as brushes, wipers and spray guns, so that treatments are evenly and uniformly applied, manufacturers' application procedures are adhered to and fastener holes are protected from corrosion.

7.07 Heat-treats rivets using tools and equipment, such as ice boxes, sodium baths, water vats, safety equipment and protective clothing, so that aging process is arrested at low temperature until installation and heat-treat procedures are in accordance with manufacturers' and/or Department of Transport standards and regulations.

7.08 Flap-peens bolt holes, so that holes are peened uniformly and for a prescribed time and stresses in bolt holes are relieved.

7.09 Applies sealants to fasteners using tools and equipment, such as brushes and dipping baths, so that sealant is uniformly and evenly applied, excess sealant is removed and manufacturers' procedures for mixing, applying and curing sealants are adhered to.

7.10 Bucks rivets using tools and equipment, such as rivet guns, bucking bars, squeeze riveter and air supply, so that set rivets meet installation specifications as established in the structural repair manual and Department of Transport regulations.

7.11 Applies/installs fasteners, washers and collars to fasteners using specialized pliers, so that specialized fasteners are assembled in accordance with manufacturers' procedures and size and grip length meet aircraft manufacturers' requirements.

7.12 Tightens/torques threaded fasteners using tools and equipment, such as torque wrenches and wire twisters, so that fastener size, grip length and torque values meet manufacturers' specifications.

7.13 Swages ends on hi-shear and huck bolt fasteners using tools and equipment, such as rivet guns, bucking bars and swaging tools, so that diameter and grip length meet manufacturers' specifications and fasteners are assembled in accordance with prescribed standards.

7.14 Installs panel and cowling fasteners using tools and equipment, such as torque wrenches and specialized pliers, so that fastener diameter and grip length meet manufacturers' specifications.

7.15 Installs rivnuts and blind nuts using tools and equipment, such as air drills and special installation tools, so that clearance holes and grip length are within manufacturers' specifications and limits.

7.16 Installs inserts into composite structures using tools and equipment, such as air drills, routers, air supply, safety equipment, protective clothing and mixing tools, so that insert location is in accordance with drawings and technical information, insert is firmly bonded to composite material and composite sandwich panels are protected during installation.

7.17 Installs blind bolts and blind rivets using tools and equipment, such as air drills, specialized installation tools, grip gauges, and air supply, so that diameter of clearance holes and grip length meet manufacturers' specifications.

TASK 8 **ASSESSES CORROSION TO AIRCRAFT STRUCTURES**

GENERAL PERFORMANCE OBJECTIVE

Assesses corrosion to aircraft structures by reviewing log book and snag sheets, inspecting aircraft structures, removing corrosion, taking measurements of damage and conducting and interpreting non-destructive tests, so that all corrosion is assessed and it is determined if corroded components can be reworked, repaired or must be replaced.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

8.01 Reviews log book/snag sheets so that the type and location of corrosion can be determined and assessed.

8.02 Gains access to corroded area using tools and equipment, such as metal snips, cutting wheel, air drill, air ratchets and screwdrivers, so that all potential corrosion can be inspected and assessed, adequate working space for repair is provided and no further damage is caused to aircraft structure.

8.03 Visually inspects aircraft structures, so that bulges, holes, cracks, discolouration and flaking that result from corrosion are identified, extent and severity of corrosion are determined and a preliminary decision on whether to replace/treat component or conduct further assessment can be made.

8.04 Removes corrosion mechanically/chemically using tools and equipment, such as brushes, disc sander, die grinder, bead blaster, end mill and spot facer, so that finished area is free of pits, flakes, discolouration and dirt, and an accurate measurement of cleaned-out area can be made.

8.05 Takes measurements and reading for depth and thickness of cleaned-out area using tools and equipment, such as depth gauge, micrometer, dial indicator and ruler, so that accurate calculations of extent of damage can be made and it is determined if reworked area is within limits, requires repair or must be replaced.

8.06 Conducts metallic tap test of composites and bonded skins, so that changes in sound are recognized and documented and the extent of underlying delamination or the existence of voids is determined.

8.07 Requests non-destructive test results so that the requirement for further repair or replacement of structural components can be determined based on manufacturers'/engineering department specifications and limits.

8.08 Conducts dye penetrant tests using vapour degreaser, brushes, sprayers, dyes and developer, so that surface cracks and defects and sub-surface flaws are identified, and it is determined if additional corrosion is present, and the requirement for further removal of corrosion can be made.

8.09 Removes corroded parts using tools, such as saws, wrenches, sockets, screwdrivers, cutters, air drills, hammers and grinders, so that corrosion located on parts or newly exposed area can be treated, decision to repair or replace parts can be made and no further damage is done to parts or aircraft structure.

8.10 Determines if repair or replacement of aircraft components or structures is required, so that proposed repair/treatment procedures adhere to manufacturers', Department of Transport or company regulations and standards and aircraft is restored to manufacturers' specifications.

TASK 9 **ASSESSES DAMAGE TO AIRCRAFT STRUCTURES**

GENERAL PERFORMANCE OBJECTIVE

Assesses damage to aircraft structures by reviewing log book and snag sheets, gaining access to damaged area, inspecting aircraft structures, making a sketch and taking measurements of the damaged area and interpreting non-destructive test results, so that extent of damage can be compared to manufacturers' specifications, tolerances and limits and decision to repair or replace damaged components can be made.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

9.01 Reviews log book/snag sheets, so that the type and location of defects or damage can be determined and assessed.

9.02 Gains access to damaged area using tools and equipment, such as metal snips, cutting wheel, air drill, wrenches, drawknife and air ratchets, so that all potential damage can be inspected and assessed, adequate working space for repair is provided and no further damage is caused to aircraft structures.

9.03 Visually inspects primary and secondary aircraft structures using equipment, such as a magnifying glass or borescope, so that holes, cracks, dents, stretching and wear are identified, the extent and severity of the damage is determined and a preliminary decision on whether to repair components or conduct further assessment can be made.

9.04 Requests non-destructive test results, so that the extent of damage can be accurately determined and a decision to repair or replace the component can be made based upon manufacturers', Department of Transport and/or company lists and specifications.

9.05 Makes sketch/tracing of damaged area, so that measurements, location and extent of damage can be documented.

9.06 Obtains and interprets technical information, such as drawings, structural repair manuals, technical bulletins and consultations with manufacturer/engineering department, so that extent of damage can be compared with manufacturers' specifications, tolerances and limits, and repair procedures can be determined.

9.07 Determines if repair/replacement of aircraft components or structure is required, so that proposed repair procedures adhere to manufacturers', Department of Transport or company regulations/standards and aircraft is restored to manufacturers' specifications.

TASK 10 **ASSEMBLES AND FITS PARTS**

GENERAL PERFORMANCE OBJECTIVE

Assembles and fits parts by interpreting structural repair manuals and technical information, aligning and trimming parts, preparing treating and finishing parts, bonding and welding components and installing fasteners, so that parts fit without distortion, edge distances are maintained and parts conform to engineering drawings and structural repair manual specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

10.01 Arranges for assembly inspection, so that aircraft components and inspection procedures comply with company and/or Department of Transportation certification regulations and standards.

10.02 Interprets drawings, structural repair manuals and other technical information, so that sequence of assembly, tolerances, fasteners, sealants, and orientation of components are identified and assembly procedures are adhered to.

10.03 Selects or constructs jigs and holding fixtures using tools and equipment, such as welders, brakes, shears, tube benders, air drills, squares, trammel and transits, so that parts and assemblies are held firmly in place without distorting them.

10.04 Aligns parts using tools and equipment, such as clamps, Cleco pliers, jigs, fixtures and vices, so that parts conform to drawing and technical information specifications.

10.05 Affixes parts with temporary fasteners using tools and equipment, such as Cleco pliers, clamps, air drills and pliers, so that alignment of part is maintained within specifications.

10.06 Takes measurements to maintain tolerances using tools and equipment, such as micrometers, rulers, scales, tape measures, vernier and callipers, so that parts or assembly conform to drawings and technical information.

10.07 Trims aircraft parts using tools and equipment, such as aviation snips, files, bandsaw, rotary files and sanders, so that parts fit without distortion, edge distances are maintained and parts conform to engineering drawings and structural repair manual specifications.

10.08 Drills holes in aircraft parts/assemblies using tools and equipment, such as air drills, drill presses, reamers, countersinks and spot facers, so that holes are accurately located and marked in accordance with engineering drawings and fastener holes are within specified edge distances and clearances.

10.09 Disassembles part using tools and equipment, such as Cleco pliers and clamps, so that parts are marked for sequence of assembly and orientation, no damage is done to part or mating surfaces and an assessment of the requirement for surface treatment and dressing of the part can be made.

10.10 Dresses parts including edges and holes using tools and equipment, such as air drills, files, countersinks and disc sanders, so that parts are clean, burrs and sharp edges are removed, stresses are relieved and required countersinks and chamfered, radius and ninety degree edges are produced.

10.11 Treats and primes parts using tools and equipment, such as brushes, vats, pads, spray guns, safety equipment and protective clothing, so that treatment solutions/primers are applied evenly and uniformly to part surface, manufacturers' application procedures are followed, corrosion is prevented and primer base provides suitable surface for finish coatings.

10.12 Applies sealants to parts using tools and equipment, such as spatulas, brushes and application guns, so that type of sealant meets structural repair manual and/or manufacturers' specifications, sealant is applied evenly and uniformly to part following manufacturers' procedures for mixing, applying and curing, and the applied sealant is air- and water-tight.

10.13 Bonds/welds parts using tools, such as spatulas, brushes, clamps, heat guns and spot welding equipment, so that parts are fitted and aligned, without distortion, parts are securely fastened to aircraft, and assembly conforms to drawings, structural repair manual and technical information.

10.14 Installs permanent fasteners using tools and equipment, such as rivet guns, bucking bars, wrenches, torque wrenches, screwdrivers, air ratchets and Allen keys, so that part is aligned and securely fastened, fastener is not damaged, fastener type, diameter and length are in accordance with structural repair manual and/or manufacturers' specifications, defective fasteners are identified and replaced, and assembly conforms to drawings and technical information.

10.15 Removes jigs and fixtures using tools and equipment, such as Cleco pliers, clamps, jacks, sockets and screwdrivers, so that installed component or part remains in alignment, no damage is caused to aircraft components or jigs and fixtures, and jigs and fixtures are lubricated, marked and stored for future use.

BLOCK B - SHEET METAL STRUCTURES

TASK 11 REPAIRS/REPLACES/MODIFIES METAL ALLOY STRUCTURES

GENERAL PERFORMANCE OBJECTIVE

Repairs/replaces/modifies metal alloy structures by conducting dye tests, removing damaged areas, preparing and installing doublers, fabricating new parts, flap-peening surfaces, welding parts and components, applying patches to skins and liners and stop drilling cracks, so that the new or modified structure is as structurally strong and functional as the original, is constructed/selected and installed in accordance with alloy guidelines and the aircraft structure according to specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

11.01 Conducts dye penetrant test using tools and equipment, such as brushes and spray guns, so that cracks are identifiable after the developing agent has been applied.

11.02 Removes damaged parts using tools and equipment, such as drills, punches, hammers and wrenches, so that remaining surrounding structures and joints are not damaged and are accessible for structural inspection.

11.03 Reinforces longerons, skins, panels and applies sealants using tools and equipment, such as drills, rivet guns, wrenches, bonding materials and routers, so that eccentric and concentrated loading of the structures, joints and fasteners are avoided and the selection and installation of doublers are in accordance with manufacturers' and Department of Transport standards.

11.04 Splices longerons, panels and skins using tools and equipment such as saws, shears, routers and drills, so that eccentric and concentrated loading of the structures, joints and fasteners are avoided and the selection and installation of doublers and plugs are in accordance with manufacturers' and Department of Transport standards.

11.05 Replaces longerons, skins, panels and sealants using tools and equipment, such as saws, shears, routers and drills, so that fabricated parts are selected and installed in accordance with suggested aircraft manufacturers' and Department of Transport standards, rendering the replaced component to be as structurally strong as the original.

11.06 Reinforces castings, doors, beams and mounts using tools and equipment, such as drills, rivet guns and bonding materials, so that the selection and installation of machined parts or doublers meet aircraft manufacturers' and Department of Transport standards, rendering the restored part/component to be as structurally strong as the original.

11.07 Flap-peens castings and/or forgings for reworked surfaces and holes, so that stress is relieved by evenly and uniformly deforming the surface and the surface is able to withstand required stress load.

11.08 Splices beams and tracks using tools and equipment, such as saws, shears, drills and rivet guns, so that the selection and installation of fabricated or machined doublers and plugs follow aircraft manufacturers' and Department of Transport standards and concentrated loading of the parts is avoided.

11.09 Replaces castings, doors, beams and mounts using tools and equipment, such as drills, rivet guns, routers and shears, so that fabricated parts are selected and assembled in accordance with aircraft manufacturers' and Department of Transport standards, rendering the replaced component to be as structurally strong as the original.

11.10 Reworks seats, lavatories, galleys and air stairs using tools and equipment, such as hammers, screwdrivers and routers, so that the selection and installation of parts and doublers follow manufacturers' and Department of Transport procedures.

11.11 Replaces seats, lavatories, air stairs and galleys using tools and equipment, such as hammers, screwdrivers and routers so that fabricated parts are selected and installed in accordance with manufacturers' and Department of Transport regulations and procedures, rendering the replaced component to be as structurally strong as the original.

11.12 Replaces rod ends on transmission and engine mounts using tools and equipment, such as jigs, drills, reamers, punches, hammers and bucking bars, so that original dimensions are maintained, engine mount is aligned and fasteners are installed in accordance with aircraft manufacturers' standards.

11.13 Applies patches to cargo and cabin liners using tools and equipment, such as rulers, tape and shears, so that patch covers hole and surrounding area in accordance with the gauge, dimensions and application procedures and restrictions specified by the manufacturer.

11.14 Replaces/rebalances control surfaces using scales and weights, so that manufacturers' specified balance conditions are maintained within limits and recorded on flight control.

11.15 Burnishes/polishes/dresses skins using tools and equipment, such as burnishing wheels and sanding discs, so that damaged area has been removed, the skin is free of rough edges and prepared for patching.

11.16 Dresses out castings, forgings and machined parts using tools and equipment, such as drills, rotary files, die grinders and sanding wheels, so that damaged area has been removed and part is free of rough edges and tapered in accordance with patch or replacement specifications.

11.17 Dresses out damaged area using tools and equipment, such as drills, rotary files, die grinders and sanding wheels, so that area is free of rough edges and surfaces and has been tapered to meet patch specifications.

11.18 Stop-drills skins for small cracks using tools and equipment, such as air drills and deburring instruments, so that holes are drilled at the extreme ends of the cracks to minimize the possibility of further spreading and reinforcements are added to carry the stresses across the damaged portion.

11.19 Flush/lap patches skins using tools and equipment, such as drills, rivet guns, aviation snips and rotary files, so that patch covers damaged area, riveting patterns follow standard practices and repair seams lie along stiffening members in accordance with manufacturers' specifications.

11.20 **Weighs aircraft and carries out balance computations and completes balance report using tools and equipment, such as scales, jacks, levelling equipment, wrenches and pliers, so that aircraft is weighed, centre of gravity and loading limits established and location and weight of ballast determined.**

TASK 12 **FABRICATES SHEET METAL PARTS**

GENERAL PERFORMANCE OBJECTIVE

Fabricates sheet metal parts from samples and by consulting technical drawings and blueprints, making shop sketches, measuring and testing samples, preparing pattern layouts and templates for blocks and moulds, selecting and preparing parts through the use of techniques, such as annealing, bending, joggling, rolling and pressing and installing and treating the sheet metal surfaces and fastening holes, so that the samples and final parts meet production and installation standards and specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

12.01 Reads blueprints or drawings, using tools and equipment, such as verniers, scales and compasses, so that three dimensional objects can be visualized, the dimensions, tolerances, materials, fasteners, processes and alternate sources of specifications are identified.

12.02 Refers to technical information, such as manufacturers' reference manuals, structural repair manuals, U.S. Department of Transportation Aircraft Inspection and Repair Manual, and engineering bulletins, so that fabrication procedures, sequences and materials are identified.

12.03 Measures samples, using tools and equipment, such as protractors, contour gauges, depth gauges and micrometers, so that dimensions are recorded in sequence, measuring tools are selected according to dimension of sample and the fabricated part conforms to specifications.

12.04 Tests samples, using tools and equipment, such as hardness tester, grinders and magnets, so that material specifications and properties are determined and the results are recorded.

12.05 Makes shop sketches, using tools and equipment, such as measuring scales, compasses and rulers, so that dimensions and form are recorded, specifications are noted in accordance with orientation on aircraft and location of part on aircraft is identified.

12.06 Lays out pattern, using tools and equipment, such as rulers, scribes, hole punches and compasses, so that dimensions are transferred to the pattern, grain direction is oriented, tolerances are met and measurements are accurate.

12.07 Prepares template, using tools and equipment, such as bandsaws, shears, files and high speed grinders, so that the template conforms to the pattern, dimensions and tolerances are accurate and the fabricated part will fit and conform to the drawing or shop sketch.

12.08 Prepares form block, using tools and equipment, such as grinders, saws, drills, files and compasses, so that the dimensions and tolerances are accurate, the fabricated part will fit and conform to the drawing or shop sketch.

12.09 Prepares mould, using tools and equipment, such as grinders, saws, sanders and squares, so that the mould dimensions and tolerances are accurate, the fabricated part will fit and conform to the drawing or shop sketch.

12.10 Selects material for part, using tools and equipment, such as micrometers, verniers and rulers, so that the material selected will meet specifications and standards in accordance with technical information or test results.

12.11 Cuts material to size, using tools and equipment, such as shears, saws, snips and routers, so that the material dimensions will conform to the drawings, sketches, templates or patterns.

12.12 Sands/deburrs sheet metal edges and holes, using tools and equipment, such as files and abrasives, so that the material is free of sharp edges, nicks, cuts or scratches.

12.13 Straight bends sheet metal in a brake, using tools and equipment, such as rulers, dividers, mechanical and hydraulic brakes, so that material grain is oriented, the part is free of cracks in the bend radius, and the angle of the bend and the bend radius conform to the drawing specifications.

12.14 Joggles sheet metal material, using tools and equipment, such as bending brakes, sheet rollers and hydraulic presses, so that the height or depth measurements comply with drawings and the material is free of scratches and cracks.

12.15 Rolls sheet metal, using tools and equipment, such as straight rollers, crown rollers and hydraulic presses, so that the part is free of defects, fits into a jig, template, fixture or on the aircraft component and the contour of the part conforms to the specifications on the drawing.

12.16 Crown rolls sheet metal, so that part is free of defects and tool marks, fits the jig, fixture, template or aircraft component and the contour of the part conforms to the lofted drawing.

12.17 Stretches/shrinks/crimps sheet metal material, using tools and equipment, such as presses, rivet guns, hammers and rollers, so that the part is free of defects and tool marks, fits the jig, fixture, template or aircraft component and the shape of the part conforms to the drawings.

12.18 Mills/routs sheet metal material, using tools and equipment, such as spot facers, cutting bits and routers, so that the milled part and surface finish are free of defects and conform to the dimensions and tolerances specified on the drawings.

12.19 Saws sheet metal material, using tools and equipment, such as hacksaws, bandsaws, radial saws and table saws, so that material is cut to specified size and is ready for final finish.

12.20 Presses sheet metal material, using tools and equipment, such as hydraulic, pneumatic and hand presses, so that the part is free of defects and tool marks, will fit the aircraft component or template and conforms to the contour dimensions and tolerances specified on the drawing.

12.21 Beads sheet metal material, so that the part is free of defects and tool marks, will fit the aircraft component or template and conforms to the contour dimensions and tolerances specified on the drawing.

12.22 Drills sheet metal material, so that the parts are ready for fastener installation and the part dimensions, tolerances, edge distance and rivet pitches are identified and calculated in accordance with drawings.

12.23 Punches sheet metal material, so that the material or part is free of defects and the location of the punches, edge distances and rivet pitches are in accordance with the drawings, templates or patterns.

12.24 Rivets sheet metal material, using tools and equipment, such as bucking bars, blind riveters, pneumatic and hand squeezers, so that the rivet head is free of snap marks, the formed end is free of marks, the surrounding structural material has not been damaged and the rivet is installed in accordance with manufacturers' instructions.

12.25 Bonds sheet metal material, using tools and equipment, such as spatulas, pneumatic and hand applicators and rollers, so that the bonded surfaces are aligned and free of inclusions and excess bonding resin.

12.26 Dimples sheet metal material, using tools and equipment, such as dimpling dies, hand and pneumatic squeezers, so that material is free of cracks and defects and material stress has been relieved in accordance with manufacturers' specifications.

12.27 Countersinks sheet metal material, so that the countersink has not penetrated the thickness of the part or material, does not exceed the dimension of the fastener and is free of nicks and chatter marks.

12.28 Flanges sheet metal around holes, using tools and equipment such as hydraulic and hand presses, so that the material is formed and located according to the dimensions on the drawing, the flange is free of defects and conforms to the contour of the part.

BLOCK C - COMPOSITE STRUCTURES

TASK 13 REPAIRS/MODIFIES COMPOSITE STRUCTURES

GENERAL PERFORMANCE OBJECTIVE

Repairs/modifies composite structures by obtaining technical information about repair/modification, dressing out damaged area, installing replacement cores, laying up and curing repair plys, conducting and interpreting maintenance tests and applying finishing coats, so that original contour, surface finish and strength of the repair/modification area are restored to manufacturers' specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

13.01 Obtains composite repair/modification information from technical resources, such as the structural repair manual, technical bulletins, drawings and the engineering department, so that repair sequence and procedures are identified and tolerances, limits and standards are determined for composite components.

13.02 Removes damaged parts using tools and equipment, such as wrenches, screwdrivers, cutters, air drills, punches and grinders, so that the area can be accessed, adequate working space is provided and extent of damage or corrosion can be assessed.

13.03 Sands, grinds and routs damaged area using tools and equipment, such as depth gauge, sanders, router, bits, air drill, grinder and scrapers, so that all evidence of deterioration and damage is removed from composite plys and core and the area is clean and prepared for replacement core.

13.04 Step/taper sands plys using tools and equipment, such as sanders, mandrills, die grinders, rulers, depth gauges and callipers, so that steps or taper are uniform, measurements are accurate and within manufacturers' specifications and limits, and area is clean and free of dust and dirt.

13.05 Cuts and trims replacement core using tools and equipment, such as sanders, bandsaws, utility knife, snips, rulers, combination square, compass, callipers and die grinder, so that material for replacement core dimensions is equal to dimensions of removed core and replacement core can be fitted into damaged area.

13.06 Selects, handles and stores composite raw materials, such as kevlars, carbon-fibres, preg and prepreg materials, by following mixing, storing and refrigeration procedures in accordance with manufacturers' instructions, so that the technician is protected from injury, the environment from contamination and the selected material meets job specifications.

13.07 Bonds replacement core using tools and equipment, such as hot bonding control unit, heat blanket, thermometer, heat gun, spatula and weigh scales, so that the bonding resins are mixed, applied and cured in accordance with manufacturers' specifications, replacement core adheres to undisturbed area of aircraft and has the correct contour to accept repair plys.

13.08 Applies potting compound to damaged area using such tools and equipment as weigh scales, vacuum pump, hot bonding control unit, heat blanket, heat gun and spatula, so that the compound adheres to the undisturbed structure and has the correct surface contour to accept repair plys.

13.09 Makes patterns for repair plys using tools and equipment, such as rulers and tape measures, so that patterns are within manufacturers' specifications, will fit precisely onto the prepared area and are numbered in sequence.

13.10 Applies resin to repair cloth using brushes, squeegees and rollers, so that a uniform impregnation to repair cloth is accomplished, and excess resin and air bubbles are removed.

13.11 Lays out and cuts repair plys using tools and equipment, such as scissors and rotary knife, so that pattern dimensions, orientation and sequence are adhered to and repair ply edges are free from fraying.

13.12 Lays up repair plys using tools and equipment, such as rollers and squeegees, so that precise location, fibre orientation and sequence of repair plys are maintained, air bubbles are removed and component contour is restored to original state.

13.13 Cures repair plys with hot bonding process using tools and equipment, such as hot bonding unit, vacuum gauge, sniffer and heat blanket, so that curing temperatures, times and vacuum pressures are as specified, original contour and strength of the repaired area is restored.

13.14 Cures repair plys with cold bonding process using tools and equipment, such as weights and peel plys, so that curing times and temperatures are adhered to and the original contour and strength of the repaired area are restored.

13.15 Performs tap test of repaired area, so that changes in sound are recognized and extent of underlying delamination or void is determined.

13.16 Arranges for non-destructive testing, so that the existence and extent of underlying damage can be determined or the repair can be certified as complete and acceptable.

13.17 Removes excess resin using tools and equipment, such as disc sanders, sanding discs and sanding blocks, so that a uniform contour or shape is achieved and dimensions are within manufacturers' specifications.

13.18 Applies primer surfacer using tools and equipment, such as disc sanders, block sanders, spray guns, contour blocks, paint brushes and die grinders, so that repaired surface is free from pits and voids, primer surfacer is applied evenly and uniformly and correct colour and finish are obtained.

13.19 Paints/coats surface using brushes, spray guns, rollers, spatulas, respirators and extraction fans, so that paint/coating is evenly and uniformly applied, total surface is protected and desired colour and finish are obtained.

TASK 14 **FABRICATES COMPOSITE PARTS**

GENERAL PERFORMANCE OBJECTIVE

Fabricates composite parts by consulting manufacturer and/or engineering department, creating master model and plastic moulds, preparing moulds for layup, laying up and curing plys, conducting and interpreting non-destructive tests and applying finishing coats, so that the contour, surface finish and strength of the fabricated part meets or exceeds manufacturers' specifications.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

14.01 Consults manufacturer and/or engineering department, so that acceptability of fabricated parts is determined, construction sequence and procedures are identified and tolerances, limits and standards for fabricated parts are determined.

14.02 Takes measurements of sample using tools and equipment, such as compasses, rulers, tape measures and contour blocks, so that workable, accurate dimensions and sketches of component are produced and approval for fabrication is obtained.

14.03 Creates a master model in a stable easily machineable material using tools and equipment, such as hand tools, cut-off saw, planer, clamps, sander, lathe, milling machines, height gauges and verniers, so that model is mouldable and in accordance with drawing specifications and technical information.

14.04 Produces a mould from a master model or sample using tools and equipment, such as spray guns, rollers, spatulas, weigh scales and hand tools, so that the mould will produce a working pattern in accordance with drawing specifications and technical information.

14.05 Makes patterns for plys using tools and equipment, such as rulers and tape measures, so that patterns are within manufacturers' specifications, will fit precisely onto the prepared area and are numbered in sequence.

14.06 Cuts plys to size using tools and equipment, such as scissors and rotary knives, so that pattern dimensions, orientation and sequence are adhered to and edges are free from fraying.

14.07 Prepares mould using tools and equipment, such as brushes, cheesecloth and parting film, so that exterior finish is smooth, clean and has a uniform coating of release agent.

14.08 Applies gel coat using tools and equipment, such as sprayers, rollers and brushes, so that the coating is even and uniform.

14.09 Lays up initial plys using tools and equipment, such as rollers and spatulas, so that precise location, fibre orientation and sequence of plys are maintained, air bubbles are removed and component contour is in accordance with drawing specifications and/or technical information.

14.10 Inserts core, so that it is situated exactly as per sample or as per manufacturers' specifications.

14.11 Lays up final plys using tools, such as rollers and spatulas, so that precise location, orientation and sequence of plys are maintained, air bubbles are removed and component contour is in accordance with drawing and/or manufacturers' specifications.

14.12 Cures plys with hot bonding process using tools and equipment, such as hot bonding unit, vacuum gauge, sniffer and heat blanket, so that curing temperatures, times and vacuum pressures are as specified and the contour and strength of the fabricated component match the original.

14.13 Cures plys with cold bonding process using tools and equipment, such as weights and peel ply, so that curing times and temperatures are adhered to and the contour and strength of the fabricated component match the original.

14.14 Performs tap test of fabricated component so that changes in sound are recognized and extent of underlying delamination or void is determined.

14.15 Arranges for non-destructive testing, so that the existence and extent of underlying defect can be determined or the fabricated composite part can be certified as acceptable.

14.16 Trims part using tools and equipment, such as cutting wheels, sanders, die grinders, routers, bandsaws and disc sanders, so that finished dimensions are the same as sample or are in accordance with manufacturers' specifications and the edges are smooth and clean.

14.17 Applies primer surfacer using tools and equipment, such as disc sanders, block sanders, spray guns, contour blocks, paint brushes and die grinders, so that repaired surface is free from pits and voids, primer surfacer is applied evenly and uniformly and correct colour and finish are obtained.

14.18 Paints/coats surface using brushes, spray guns, rollers, spatulas, respirator and extraction fan, so that paint/coating is evenly and uniformly applied, surface is protected and desired colour and finish are obtained.

BLOCK D - FABRIC AND WOOD REPAIR

TASK 15 RE-COVERS/REPAIRS FABRIC SURFACES

GENERAL PERFORMANCE OBJECTIVE

Re-covers/repairs fabric surfaces by reviewing technical information and procedures, conducting strength tests, isolating damaged areas, splicing, attaching, shrinking, stretching and doping fabric and applying final finishes, so that the new fabric is selected in accordance with aircraft textile fabric standards, is of the same or better quality and strength as the original and is treated against potential ultraviolet radiation and weather damage.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

15.01 Refers to technical information such as manufacturers' reference manuals, structural repair manuals, U.S. Department of Transportation Aircraft Inspection and Repair Manual, and engineering bulletins, so that repair replacement and modification procedures, materials, equipment and standards are identified and interpreted.

15.02 Conducts fabric tests, so that the strength of the fabric is measured, compared and analyzed according to Department of Transport specifications.

15.03 Repairs fabric surfaces using tools and equipment, such as block sanders, shears, abrasives, brushes and spray guns, so that torn edges are sewn, adhesives are evenly applied and the original strength of the fabric covering has been restored.

15.04 Lap splices fabric surfaces using tools and equipment, such as block sanders, shears, abrasives, brushes and spray guns, so that torn edges are sewn, adhesives and coating are evenly applied and the original strength of the fabric covering has been restored.

15.05 Attaches fabric and reinforcing tapes to airframe using tools and equipment, such as shears, electric irons, brushes, sewing machines and pop riveters, so that the fastening will conform the fabric to the aerodynamic shape of the airframe without bunching, ballooning and wrinkling.

15.06 Shrinks fabric using tools and equipment, such as electric irons and spray guns, so that there are no wrinkles and the slack is removed by dampening with water on cotton/linen fabrics and with heat on synthetic fabrics.

15.07 Rib stitches fabric to ribs using tools and equipment, such as rulers, sewing equipment, scissors and beeswax, so that manufacturers' standards for lacing cord tension and type of knot and spacing are met.

15.08 Dopes fabric using tools and equipment, such as brushes and spray guns, so that fabric surface is evenly and thoroughly covered to protect against weather damage and water absorption.

15.09 Fills fabric weave and sands doped surfaces using tools and equipment, such as brushes, spray guns and abrasives, so that fabric is aerodynamically smooth, taut and free of runs, sags and high and low spots.

15.10 Applies UV barriers and final finish using tools and equipment, such as brushes, spray guns and abrasive papers, so that the fabric is thoroughly and evenly protected against the effects of weather and ultraviolet radiation and is evenly coated with a final finish to improve its visual appearance.

TASK 16 **INSPECTS/REPAIRS WOOD STRUCTURES**

GENERAL PERFORMANCE OBJECTIVE

Inspects/repairs wood structures by reviewing technical information and procedures, isolating and removing deteriorated areas, splicing, patching, sealing and covering structures and fabricating or moulding new structures, so that the replacement wood is selected in accordance with aircraft wood standards, is of the same or better quality and strength as the original and the surface has been treated against potential weather damage.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

16.01 Refers to technical information, such as manufacturers' reference manuals, structural repair manuals, U.S. Department of Transportation Aircraft Inspection and Repair Manual, and engineering bulletins, so that repair replacement and modification procedures, materials, equipment and standards are identified and interpreted.

16.02 Inspects structures for deterioration using tools and equipment, such as mirrors, magnifying glasses and flashlights, so that the location of loose nails, mildew, fungus, dry rot, cracks, weakened glue joints, compression shakes and wood defects can be identified and marked.

16.03 Selects and replaces materials for wood structures using tools and equipment, such as saws, planes, drills, brushes and C-clamps, so that aircraft quality wood and repair/replacement procedures are selected in accordance with Department of Transport standards.

16.04 Splices/patches/scarves/laminates and reinforces wood structures using tools and equipment, such as saws, planes, drills, brushes, C-clamps and holding fixtures, so that the repaired structure meets the strength and surface finish requirements and standards of the Department of Transport.

16.05 Seals/refinishes wood surfaces using tools and equipment, such as brushes and spray guns, so that the surface is free of dry spots and will not absorb moisture.

16.06 Covers/recovers wood structures with fabric using tools and equipment such as scissors, sewing machines, brushes, spray guns and sanding blocks so that the fabric will conform to the contour of the structure without air inclusions, folds and wrinkles.

16.07 **Fabricates/moulds/shapes wood structures using tools and equipment, such as mechanical and hydraulic presses, saws, planes, drills and sanding blocks, so that the replaced structure conforms to the sample/template size and shape or instructions contained in aircraft drawings or manuals.**

BLOCK E - SPECIALIZED WORK PRACTICES AND PROCESSES

TASK 17 FABRICATES/REPAIRS/MODIFIES FLUID LINES, CONDUITS AND FITTINGS

GENERAL PERFORMANCE OBJECTIVE

Fabricates/repairs modifies fluid lines, conduits and fittings by reviewing technical information, identifying, depressurizing systems and removing fluids, lines or sections, measuring and shaping tubing, and attaching flared and flareless fittings, so that new lines and fittings are free of defects, contaminants and leaks, modifications meet new specifications and replaced components are equivalent to the original in terms of operating characteristics, strength and the ability to withstand aircraft operating conditions.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

17.01 Refers to technical information, such as manufacturers' reference manuals, structural repair manuals, U.S. Department of Transportation Aircraft Inspection and Repair Manual, and engineering bulletins, so that repair replacement and modification procedures, materials, equipment and standards are identified and interpreted.

17.02 Identifies/labels lines using coloured bands and tags, so that all fluid and electrical lines are labelled and identified prior to removal/service.

17.03 Removes fluid lines and sections using tools, such as pliers, hammers and wrenches, so that lines are deactivated, drained and/or depressurized and junctions or remaining lines are capped or plugged.

17.04 Selects materials and fittings for fluid lines, so that new lines and fittings match removed materials in accordance with manufacturers' specifications.

17.05 Attaches/replaces fittings using tools and equipment, such as swagers and flaring equipment, so that new fittings are swaged and securely attached to tubing and installed in accordance with manufacturers' specifications.

17.06 Bends and shapes tubing as per sample and drawings using tools and equipment, such as hand and mechanical bending tools and tube cutters, so that the tubing and shape match the template or removed part.

17.07 Tests lines for leakage using tools and equipment, such as wrenches, pressure gauges and test rigs, so that systems operate without leaks when fully operational.

17.08 Installs fluid lines using wrenches, so that tubing and shape match template or part removed and lines and fittings are installed in accordance with company and manufacturers' specifications.

17.09 Fabricates electrical conduits and fire fighting lines using tools and equipment, such as tube benders and cutters and flaring tools, so that conduits and lines meet manufacturers' and electrical specifications.

TASK 18 **REPAIRS/REPLACES WINDOWS AND LENSES**

GENERAL PERFORMANCE OBJECTIVE

Repairs windows and lenses by sanding and polishing surfaces, sewing, welding and patching cracks and splits, replacing windows, and fabricating lenses, so that windows and lenses are returned to serviceable condition as specified in the structural repair manual or technical orders.

SKILLS SPECIFIC PERFORMANCE OBJECTIVES

18.01 Assesses windscreen and window condition using light sources and magnifying glasses, so that the decision to repair or replace windscreen can be made based on manufacturers' specifications and repair limits.

18.02 Sands, buffs and polishes windows and lenses using abrasives, cloth, and buffing and polishing compounds, so that windows and lenses are returned to serviceable condition as specified in the structural repair manual or technical order or decision to replace windows and lenses can be made.

18.03 Plastic welds windows and lenses using tools and equipment, such as a plastic welding gun, routers, grinders, plastic welding rods and an air compressor, so that plastic weld material is laid down evenly and adheres firmly to crack or split, and windows and lenses are returned to serviceable condition as specified in safety standards and/or maintenance manuals.

18.04 Lap patches windows and lenses using tools and equipment, such as a bandsaw, file, shears, snips and spatula, so that patch completely covers crack or split, is aligned and securely bonded to window/lens, and windows and lenses are returned to serviceable condition as specified in safety standards and/or maintenance manuals.

18.05 Replaces windows and lenses using tools and equipment, such as an air drill, squeeze riveter, screwdrivers and wrenches, so that windows and lenses are trimmed, fitted, sealed and permanently fastened in place, and conform to required safety standards and maintenance manual procedures and specifications.

18.06 **Fabricates lenses using tools and equipment, such as a bandsaw, air drill, squeeze riveter, reamer and hot air gun, so that dimensions, shape and material of lenses meet drawing or maintenance manual specifications, the lenses fit within specified edge distances and the fabricated lenses are serviceable replacements.**